Space Weather Forecast

Issued on Wednesday 4 December 2024 at 12:04 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of isolated Moderate flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low to Moderate over the past 24 hours, with an isolated low level Moderate-class flare at 04/1001 UTC from a region just beyond the east limb.

Two bipolar regions near the southwest limb have produced the odd common-class flare and showed some signs of declining. There are currently nine sunspot regions currently on the disc, however the majority are small and simple. Alongside the two in the southwest, the other exceptions are two new regions that have moved onto the Earth-facing disc from over the southeast limb. While potentially also providing a flaring risk, these remain difficult to assess due to their location.

No Earth-directed CMEs (coronal mass ejections) have been observed.

Solar Wind / Geomagnetic Activity: The ongoing passage of a weak, glancing CME was observed, arriving around 02/2000 UTC, after likely leaving the Sun on 27 Nov. Solar wind speeds were predominantly slightly elevated and showed a gradual, albeit erratic, rising trend through the period, with a recent brief peak of 540km/s. Interplanetary Magnetic Field (IMF) strength was occasionally Moderate between 031500-04/0330 UTC, otherwise Weak. The north-south component was Weakly variable between negative (southward) and positive (northward) orientations. Geomagnetic activity was Quiet to Unsettled (Kp 1-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Mostly Low activity is expected with a chance of isolated Moderate class flares.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. There are no faster solar winds from any coronal holes expected through the period, with slightly elevated winds easing expected to ease to be mainly background. Geomagnetic activity is forecast to be Quiet with isolated Unsettled intervals.

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Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to remain at background.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	Yes	50	50	50	50
Very Active	R3-R5 (X Class)	No	5	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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